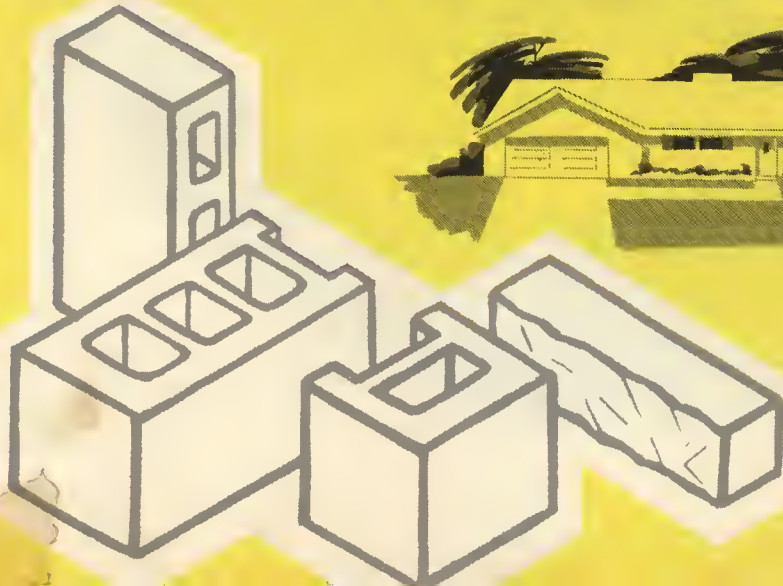


Handy guide for small

CONCRETE MASONRY *jobs*



Portland Cement Association
33 West Grand Avenue
Chicago 10, Illinois

Patios

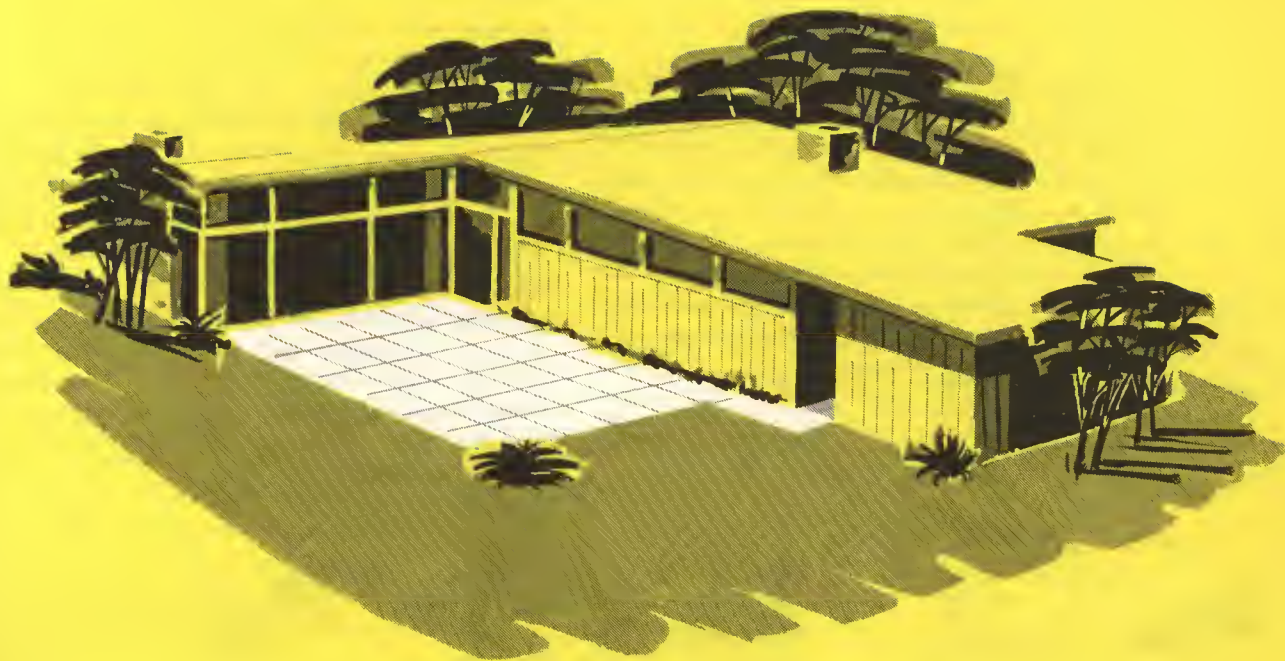
Outdoor living and modern house design suggest many improvements around the home that can be built of concrete block. Only a few are mentioned in this booklet. You will see many others you will want for your home.

Individuality is possible with concrete block because many sizes and shapes are available. And block is both inexpensive and simple to use. Another plus feature is the low maintenance cost. Visit your local concrete products plant, talk to the manufacturer and work out some improvements for your home this year. Better your living—use concrete block.

Colored patio block are available at many concrete products plants. They come in various sizes and colors and can be used in combination to produce a multitude of attractive patterns to meet individual taste.

To build the patio, first remove the sod in the area and place a 2-in. sand bed if the natural soil is clay. Thoroughly tamp the sand bed; then lay the block flat. A $\frac{3}{8}$ -in. or $\frac{1}{4}$ -in. space is left between block and later filled with sand. No mortar is needed.

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Garden walls

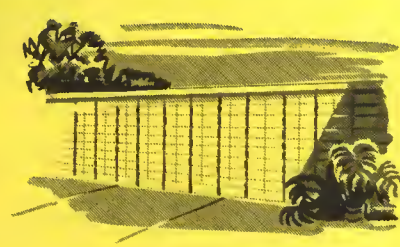
Concrete block walls around the lawn emphasize the beauty of the home, are economical to build and require little maintenance. Concrete masonry units are uniform in size and shape and are of high quality. Blocks are easy to use—you need only a few simple tools to build a neat, attractive wall.

Blocks of any height are suitable for garden walls. For stability, however, the width of the block should be at least 8 in. except for extremely low walls, where narrower blocks may be used.

WALL PATTERNS

Many pleasing designs are possible when you use concrete masonry. Combining 8x8x16-in. and half-

height 4x8x16-in. blocks gives interesting patterns. Scoring 8x8x16-in. blocks vertically at the center of each block with a mason's saw will give the effect of 8x8-in. stacked units. By scoring in other directions different effects are obtained. Where strong horizontal lines are desired, they can be obtained easily by using standard blocks placed in regular running bond. The horizontal lines are accentuated by heavily tooling the lengthwise joints and striking off the mortar in the vertical joints flush with the wall surface. Garden walls with rounded corners are built by using bullnose blocks. Laying up units with open spaces between them in each row gives a lattice effect. Deep shadows and a three-dimensional effect in the wall surface are produced by setting the blocks out beyond the wall line at regular intervals.



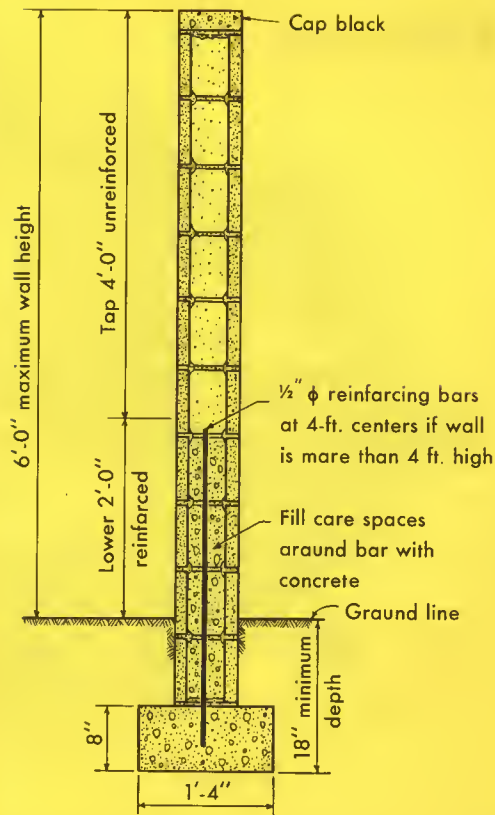
FOUNDATIONS AND FOOTINGS

A substantial garden wall needs a good foundation. The first step is to make a footing of cast-in-place concrete. The bottom of the footing should be on firm soil at least 18 in. below ground level; in colder areas, it should extend below the frost line. The footing should be twice the wall width and half as thick (deep) as it is wide. Thus, for an 8-in. thick wall, the footing would be 16 in. wide and 8 in. deep.

The below-grade portion of the wall can be built of the same block as the wall above grade. The first course of block is placed in a full bed of mortar on the footing.

REINFORCEMENT

Walls less than 4 ft. high need no reinforcement. For walls 4 to 6 ft. high, reinforcing bars $\frac{1}{2}$ in. in diameter should be used. These bars are set in the footing at 4-ft. centers and extend into the block cores. The core spaces around the bars are then filled with concrete. The bars should be long enough to extend at least 2 ft. above ground level for a 6-ft. high garden wall.



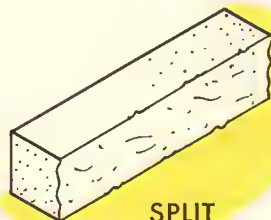
CROSS-SECTION OF GARDEN WALL

Planters

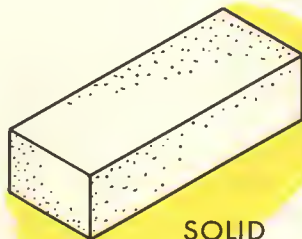
A beautiful planter of concrete block gives a home the modern look. Building one at the front or rear entrance, along the patio or driveway, or under the picture window will make the house more attractive.

Planters are built of split block, solid block or standard units, or a combination of block of several sizes. Your concrete products dealer will be happy to show you the kinds and sizes of block available.

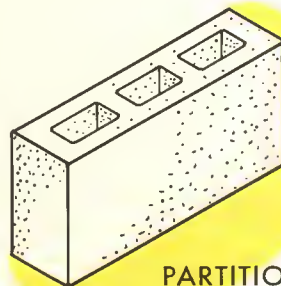
A foundation slightly wider than the planter walls is placed first. Be sure that the foundation is level. The bottom of the planter is left open for drainage; however, if the planter is built on an existing slab provide weepholes around the bottom for drainage. Do not place soil in the planter until a week after it is completed. When properly built, planters remain attractive year after year with little maintenance.



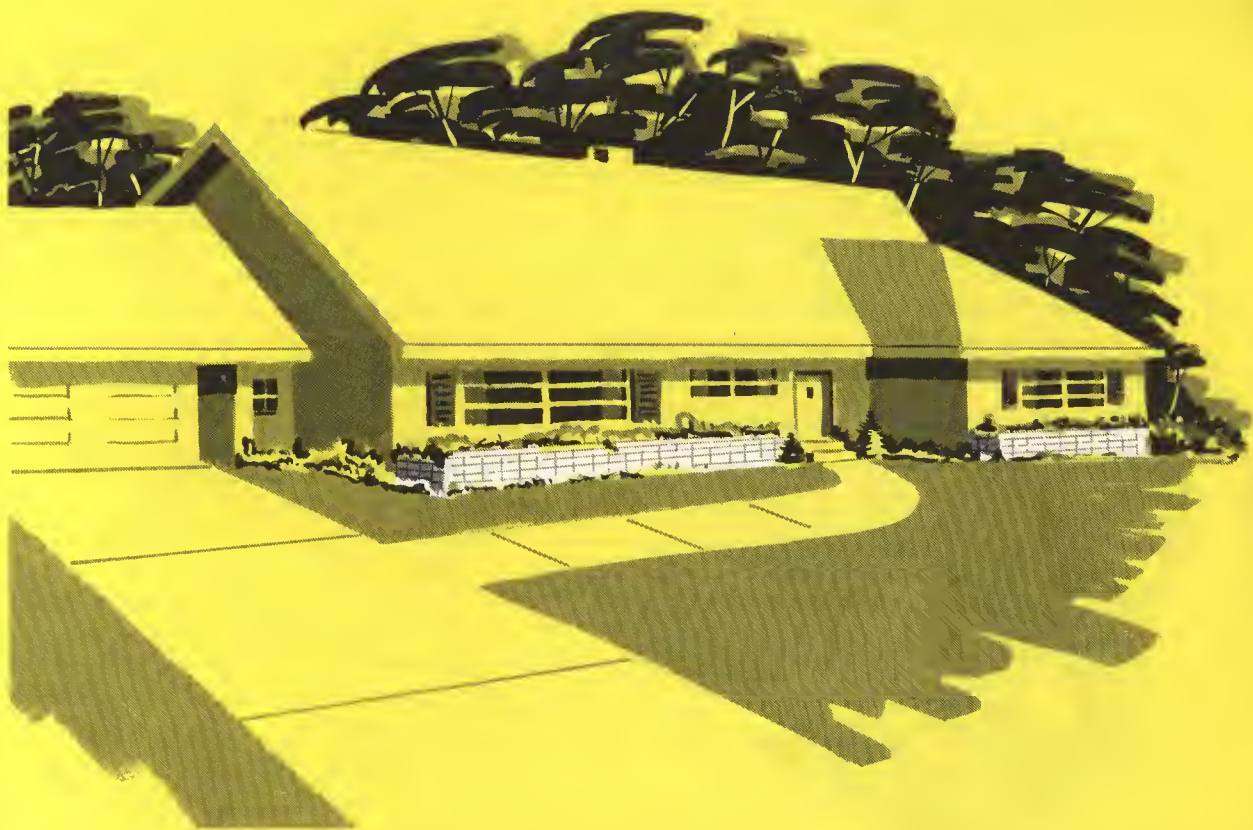
SPLIT



SOLID



PARTITION



Outdoor fireplaces

More and more people are discovering the pleasures of outdoor cooking . . . the distinctive flavor of food cooked over an open fire. This inexpensive fireplace for outdoor cooking is serviceable and easily built. Anyone can build the fireplace with the materials listed below. No mortar is needed.

The blocks are stacked on a concrete slab or directly on the ground. Pieces of pipe or reinforcing bars are



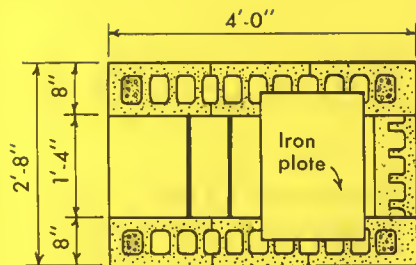
driven into the ground to anchor the sidewalls and chimney if a base slab is not used. When the fireplace is built on a slab the vertical bars are anchored in the slab before the blocks are placed. Cores with pipe or bars in them are filled with concrete.

These are the materials needed for the fireplace:

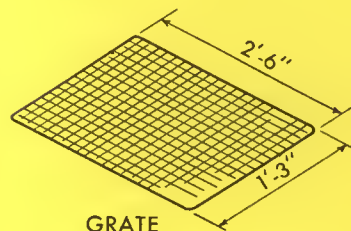
- 8—8x8x16-in. single corner block
- 4—8x8x8-in. half corner block
- 11—8x8x16-in. stretcher block
- 3—8x8x16-in. double corner block
- 3—4x8x16-in. solid or partition block
- 1—1-ft. 4-in. by 1-ft. 10-in. by $\frac{3}{8}$ -in. flat iron plate
- 1—2-ft. 6-in. by 1-ft. 3-in. grate
- 1—2-ft. 8-in. by 2-ft. 0-in. grill
- 5—3-ft. 1-in. by 1-in. by $\frac{3}{8}$ -in. strap steel grate holders
- 8— $\frac{3}{4}$ -in. by 3-ft. 0-in. pipe or reinforcing bars
- 4— $\frac{3}{4}$ -in. by 5-ft. 0-in. pipe or reinforcing bars

For a base slab use:

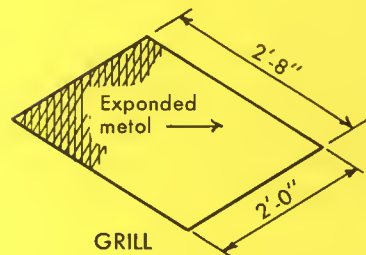
- $\frac{3}{4}$ sack cement
- 2 cu.ft. sand
- 2½ cu.ft. gravel



PLAN



GRATE

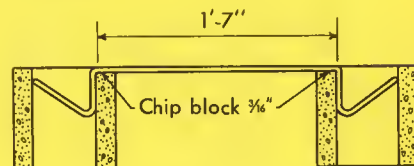
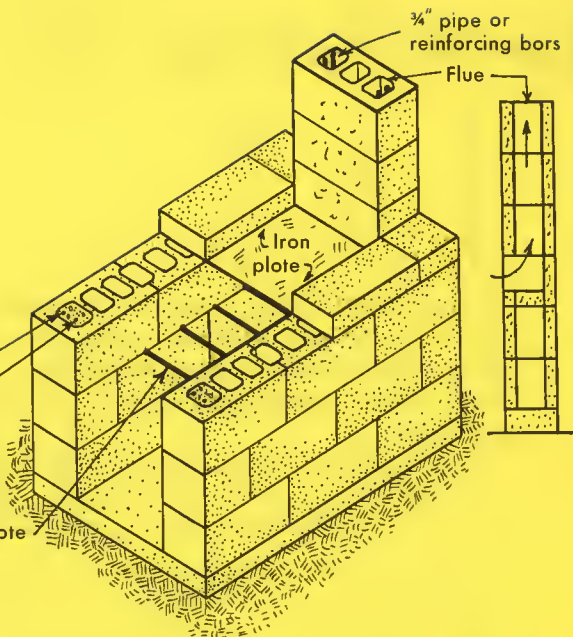


GRILL

Fill core
with grovel
or concrete

$\frac{3}{4}$ " pipe or
reinforcing bars

Strops to hold grate



DETAIL OF GRATE HOLDERS

How to lay concrete block

Concrete block of various shapes and sizes are available for home improvements, but for most around-the-house jobs stretcher, corner and half block are needed. Common sizes are 8x8x16 in. (see page 11), 8x4x16 in. and 6x8x16 in.

ESTIMATING

Before any work is started, the amount of material is estimated for cost determination and ordering purposes. Block and mortar materials are estimated as follows:

Block. First, determine the number of courses by multiplying the height of the wall in feet by $1\frac{1}{2}$ for 8-in. high block. Multiply the wall height by 3 for 4-in. high block. Find the number of block in each course by multiplying the length of the wall in feet by $\frac{3}{4}$. The total number of block is the number of block in each course multiplied by the number of courses. Half block are needed for every other course at the end of the wall. Order the same number of corner block as there are courses.

Mortar. For each one hundred 8x8x16-in. block use:

$$\left. \begin{array}{l} \frac{3}{4} \text{ sack masonry} \\ \text{cement—Type II} \\ 200 \text{ lb. sand} \end{array} \right\} \text{ or } \left\{ \begin{array}{l} \frac{1}{2} \text{ sack portland cement} \\ 15 \text{ lb. hydrated lime—Type S} \\ 200 \text{ lb. sand} \end{array} \right.$$

Example: The sketch shows a 6-ft. high garden wall built of 8x8x16-in. concrete block. To build the wall, you would need the following materials:

$$6 \times 1\frac{1}{2} = 9 \text{ courses}$$

$$150 \times \frac{3}{4} = 112\frac{1}{2} \text{ block in each course}$$

$$112\frac{1}{2} \times 9 = 1,012\frac{1}{2} \text{ total block}$$

$$2 \text{ ends: } 9 \text{ half block}$$

$$2 \text{ corners: } 18 \text{ corner block}$$

$$\text{Order: } 1,012 - 8 \times 8 \times 16\text{-in. block (18 are corner block)}$$

$$9 - 8 \times 8 \times 8\text{-in. half block for ends}$$

$$\left. \begin{array}{l} 8 \text{ sacks masonry} \\ \text{cement—Type II} \\ 2,000 \text{ lb. sand} \end{array} \right\} \text{ or } \left\{ \begin{array}{l} 3\frac{1}{2} \text{ sacks portland cement} \\ 150 \text{ lb. hydrated lime—Type S} \\ 2,000 \text{ lb. sand} \end{array} \right.$$

LAYING BLOCK

The mortar for block work consists of 1 part masonry cement and 3 parts clean sand; or 1 part portland cement, 1 part hydrated lime and 4 to 6 parts sand. Enough mixing water is added to obtain a workable mortar.

Always lay block for the corners first. Each block is carefully leveled and plumbed since the corners are the guides

for the rest of the wall. A line stretched between the corners serves as a guide for the intermediate block. If the wall is long and the line sags at the center lay block near the center to hold up the line.

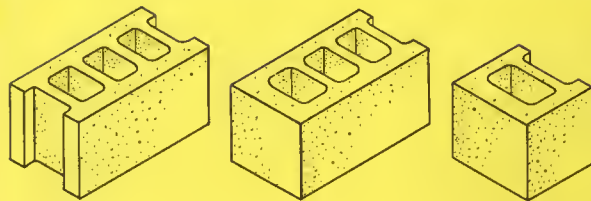
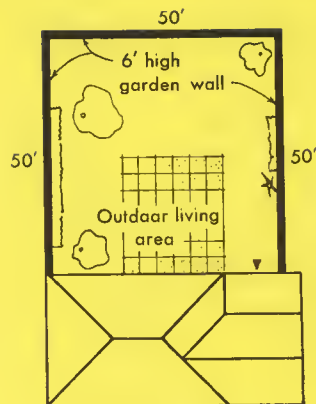
Many techniques are used to place mortar for the joints. One way is to spread a strip of mortar along the face shells of the block. The only mortar placed on the block being laid is put along the end face shells. The finished joint after each block is leveled should be $\frac{3}{8}$ in. A tooling iron or grooving tool run along each joint before the mortar has hardened compacts it and accentuates the pattern.

PAINTING

Portland cement paint is commonly used for concrete block because it does not obscure joints or surface texture. Cement paints are available at most material dealers in a variety of colors; complete instructions for mixing are given.

Before painting, apply water lightly to the block surface with a sprayer or brush. Scrub paint first into all joints with a stiff-bristled brush and then over the entire surface.

Allow the paint to harden a little but not to dry out completely. Then fog-spray the surface with water and keep damp for 24 hours. Apply second coat to damp surface. After paint has hardened enough that it will not run, fog-spray the surface again and keep moist for 48 hours. Never paint concrete masonry in extremely hot, windy weather or when the temperature may drop below 40 deg. F.



The activities of the Portland Cement Association, a national organization, are limited to scientific research, the development of new or improved products and methods, technical service, promotion and educational effort (including safety work), and are primarily designed to improve and extend the uses of portland cement and concrete. The manifold program of the Association and its varied services to cement users are made possible by the financial support of over 70 member companies in the United States and Canada, engaged in the manufacture and sale of a very large proportion of all portland cement used in these two countries. A current list of member companies will be furnished on request.

Concrete block is readily available in most communities. It is produced in many different sizes and shapes and from a variety of aggregates, such as sand and gravel, crushed stone, cinders, expanded slag, expanded shale or clay, or volcanic materials. Where special units are desired for a particular project, architects and builders should check with local producers to determine whether the required units are available.